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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/459,995	12/14/1999	ALEX CHALFIN	15-4-833.00	1891

7590 01/22/2004

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EXAMINER

CRAIG, DWIN M.

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 01/22/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

ppg

Office Action Summary	Application No.		Applicant(s)	
	09/459,995		CHALFIN ET AL	
	Examiner		Art Unit	
	Dwin M Craig		2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11-3-2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6, 7, 9, 10 and 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 8, 11 and 16 is/are rejected.
- 7) ☒ Claim(s) 2, 5 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-15 have been presented for reconsideration. Claims 3, 6, 7, 9, 10, 13-15 have been cancelled. Amended Claims 1, 8 and 11 have been presented for reconsideration. Dependent Claims 2, 4, 5 and 12 have been presented for reconsideration. Claim 16 has been presented for examination.

Response to Arguments

2. Applicant's arguments filed on 3 November 2003 have been fully considered. Examiners response is as follows:

2.1 Regarding Applicant's response concerning Examiner's rejections of Claims 1, 2, 6, 7, 8, 11, 12, 14 and 15:

Applicant has argued that:

Claim 1 has been amended.

Claim 8 has been amended.

Claim 11 has been amended.

The Examiner asserts that the amendments to the claims make the Applicant's claimed limitations a non-obvious improvement over the prior art of record. The Examiner withdraws the earlier 35 U.S.C. 103(a) rejections of Claims 1, 8 and 11. An updated search has revealed new art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Independent Claims 1, 8, 11 and 16 and dependent Claim 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schaumont et al. U.S. Patent 6,233,540** in view of **Bennington et al. U.S. Patent 4,918,652** and in further view of **Bershteyn et al. U.S. Patent 5,678,028**.

3.1 Regarding independent **Claims 1, 8, 11 and 16** the *Schaumont et al.* reference teaches, a method of synchronizing a plurality of simulation modules (**Figure 21, Col. 8 Lines 14-39**), issuing a clock credit, *from a clock arbitrator* (**Col. 23 Lines 15-67, Col. 24 Lines 1-5**), to each simulation module (**Figures 9 & 10, Col. 8 Lines 55-58, Col. 16 Lines 6-33**), and a test bench component that gets compiled together into one binary executable module (**Figure 23 & Col. 25 Lines 15-27**).

However, the *Schaumont et al.* reference does not expressly disclose a *shared memory interface, a programming language interface, and execution by each simulation module to an extent based on the clock credit*,

The *Schaumont et al.* reference discloses that there is a need in the simulation art for simulating behavior at any level of design development (**Col. 2 Lines 25-27**). An artisan of

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ordinary skill would be motivated to find a way to interface clock control and distribution between simulations modules to allow for complete visibility into a design process to remedy the express deficiency of the *Schaumont et al.* reference. In the same circuit simulation art the *Bennington et al.* reference teaches execution by a simulation element to an extent of a clock credit (Col. 2 Lines 5-57, Col. 4 Lines 22-67, Col. 5 Lines 1-17).

Thus, one of ordinary skill in the art, at the time the invention was made, would have combined the method of synchronizing simulation modules of the *Schaumont et al.* reference with the control of simulation module execution methods of the *Bennington et al.* reference because, by synchronizing all of the clocks in the simulation greater accuracy is realized (Col. 1 Lines 61-64).

The *Schaumont et al.* reference does not expressly disclose a shared memory programming language interface for communicating between simulation modules. An artisan of ordinary skill would have been motivated to find a method of implementing an interface between programming modules. In the same simulation art, the *Bershteyn et al.* reference discloses a programming language interface (Col. 5 Lines 6-13), with a shared memory interface (Col. 9 Lines 46-67 & Col. 10 Lines 1-35).

Thus, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to have modified the method of synchronizing simulation modules of the *Schaumont et al.* reference with the method of controlling simulation modules of the *Bershteyn et al.* reference because, the simulation will execute faster if you limit the number of clock cycles you use to simulate a particular component (Col. 3 Lines 45-54).

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3.2 As regards dependent **Claim 4** the *Shaumont et al.* reference discloses a test bench (Figure 23 & Col. 25 Lines 15-27).

Allowable Subject Matter

4. **Claims 2, 5 and 12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. An updated search has revealed new art. The Examiner withdraws the earlier rejections of **Claims 1-5, 11, 13, and 8-10**. The Examiner has applied new art rejections to independent **Claims 1, 8, 11 and 16** and dependent **Claim 4**. The Examiner is now objecting to **Claims 2, 5 and 12** because they are dependent on rejected base claims.

9.1 This Office Action is **NON-FINAL** because of the new art rejections.

9.2 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Sarkar S., Basu A., Majumdar A., "Synchronization of Communicating Modules and Processes in High Level Synthesis" IEEE, 1995 discloses method for different simulation modules to communicate.
- U.S. Patent 5,987,243 teaches event synchronization of simulation modules.
- U.S. Patent 6,099,579 teaches synchronizations of different clock domains in simulations.

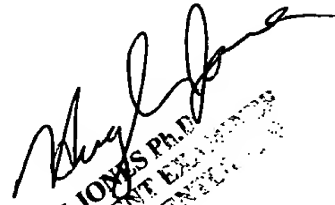
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9.3 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M Craig whose telephone number is 703 305-7150. The examiner can normally be reached on 9:00 - 5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703 305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

DMC
January 14, 2004


HUGH JONES PH.D.
PRIMARY PATENT EXAMINER
TECHNOLOGY CENTER